

WHAT IS CLAIMED IS:

1. A vehicle automatic transmission for achieving multiple speeds comprising: a speed reduction planetary gear that reduces speed of and outputs the input rotation of the input shaft; at least two speed reduction transmitting clutches which are capable of transmitting the reduced speed rotation that pass through said speed reduction planetary gear; a planetary gear set having at least two rotation elements wherein each can transmit the reduced speed rotation by these speed reduction transmitting clutches; and an input transmitting clutch which is capable of transmitting the input rotation into one of said at least two rotation elements; wherein a hydraulic servo of said input transmitting clutch is disposed between the axial direction of said planetary gear set and said speed reduction planetary gear;

and wherein at least one of the hydraulic servos of said reduced speed transmitting clutches is disposed on the side opposite in the axial direction from said planetary gear set as to the hydraulic servo of said input transmitting clutch;

and wherein said input shaft and at least one of said rotation elements are linked via said input transmitting clutch, and has an outer circumferential side linking path which passes through the outer circumferential side of at least one of said two reduced speed transmitting clutches;

and wherein at least one of said two reduced speed transmitting clutches and at least one of the two rotation elements of said planetary gear set are linked via an inner circumferential side linking path which passes through the inner circumferential side of said input transmitting clutch.

2. A vehicle automatic transmission for achieving multiple speeds comprising: a speed reduction planetary gear which reduces speed of and outputs the input rotation of the input shaft; at least two speed reduction transmitting clutches which are capable of transmitting the reduced speed rotation that pass through said speed reduction planetary gear; a planetary gear set comprising at least two rotation elements wherein each can transmit the reduced speed rotation by these speed reduction transmitting clutches; and an input transmitting clutch which is capable of transmitting the input rotation into one of said at least two rotation elements, wherein a hydraulic servo of said input transmitting clutch is disposed between the axial direction of said planetary gear set and said speed reduction planetary gear;

and wherein the support wall that is fixed to a case is disposed between the axial direction of the hydraulic servo of said input transmitting clutch and said planetary gear set;

and wherein the hydraulic oil is supplied to the hydraulic servo of said input transmitting clutch, via an oil line provided on said support wall.

3. The vehicle automatic transmission according to claim 2, wherein at least one of the hydraulic servos of said reduced speed transmitting clutches is disposed on the side opposite in the axial direction from said planetary gear set as to the hydraulic servo of said input transmitting clutch;

having an outer circumferential side linking path which links said input shaft and one of said at least two rotation elements via said input transmitting clutch, and which passes through at least one of said two reduced speed transmitting clutches;

and wherein said transmission comprises at least one of said two reduced speed transmitting clutches and at least one of two rotation elements of said planetary gear set is linked via the inner circumferential linking member which passes through the inner circumferential side of said input transmitting clutch.

4. The automatic transmission according to claim 1 and claim 3, wherein said input transmitting clutch is formed linked with one of two rotation elements of said planetary gear set, via at least one portion of said inner circumferential side linking path.

5. The vehicle automatic transmission according to claim 1, 3, or 4 wherein said speed reduction planetary gear comprises a fixed rotation element wherein the rotation is fixed, and an input rotation element that is constantly linked to said input shaft, and a reduced speed rotation element that outputs said reduced speed rotations;

and wherein said outer circumferential side linking path is formed of a path which links to said input shaft via said input rotation element;

and wherein the hydraulic servo of said input transmitting clutch further comprises a clutch drum that is open in the direction of said speed reduction planetary gear, and the outer circumferential side thereof is linked to said first outer circumferential side linking path, and a piston member which defines a hydraulic oil chamber in cooperation with said clutch drum so as to press a friction plate based on said hydraulic oil.

6. The vehicle automatic transmission according to claim 1, 3, 4, or 5 wherein said two speed reduction transmitting clutches are a first clutch and a third clutch;

and wherein said input transmitting clutch is a fourth clutch;

and wherein said planetary gear set has a first rotation element and a second rotation element and a third rotation element and a fourth rotation element which are four rotation elements including said two rotation elements;

and wherein said first rotation element is capable of transmitting said input rotation from said fourth clutch, and said reduced speed rotation is capable of transmitting from said third clutch, and the rotation thereof is capable of being fixed by a first retaining means;

and wherein said second rotation element is capable of transmitting said reduced speed rotation from said first clutch;

and wherein said third rotation element is capable of said input rotation transmitting from the second clutch, and is capable of the rotation being fixed by the second retaining means;

and wherein said fourth rotation element is linked to an output member.

7. The vehicle automatic transmission according to claim 6, wherein said first and third clutches are disposed on the side opposite in the axial direction from said planetary gear set as to the hydraulic servo of said fourth clutch;

and wherein said outer circumferential side linking path has a first linking member which links said input shaft and said fourth clutch, passing through the outer circumferential side of said first and third clutches;

and wherein said inner circumferential side linking path has a second linking member which links said third clutch and said first rotation element, and a third linking member which links said first clutch and said second rotation element.

8. The vehicle automatic transmission according to claim 7, wherein said fourth clutch is linked to said first rotation element via said second linking member.

9. The vehicle automatic transmission according to claim 7 or claim 8, wherein said first retaining means is linked to said second linking member via a hub member which passes through between the axial direction of said fourth clutch and said planetary gear set.

10. The vehicle automatic transmission according to claim 7 or claim 8, wherein the clutch drum of said fourth clutch is linked to said second linking member, and also the clutch drum of said fourth clutch is capable of being retained by said first retaining means.

11. The vehicle automatic transmission according to one of claim 7 through claim 10; wherein the hydraulic servo of said third clutch is disposed between the axial direction of said speed reduction planetary gear and the hydraulic servo of said fourth clutch;

and wherein the hydraulic oil is supplied to the hydraulic servo of said third clutch via the oil line provided on said support wall.

12. The vehicle automatic transmission according to claim 11, wherein the hydraulic servo of said first clutch is disposed on the side opposite in the axial direction from

the hydraulic servo of said third clutch as to said speed reduction planetary gear, and on the boss unit extended from said case;

and wherein the hydraulic oil is supplied to the hydraulic servo of said first clutch from the oil line provided within said boss unit.

13. The vehicle automatic transmission according to claim 12, wherein the hydraulic servo of said second clutch is disposed on the side opposite in the axial direction from said speed reduction planetary gear as to said planetary gear set.

14. The vehicle automatic transmission according to claim 12, wherein the hydraulic servo of said second clutch is disposed between the axial direction of said planetary gear set and said speed reduction planetary gear.

15. The vehicle automatic transmission according to claim 14, wherein the hydraulic servo of said second clutch is disposed between the axial direction of the hydraulic servo of said third clutch and said speed reduction planetary gear.

16. The vehicle automatic transmission according to claim 11, wherein the hydraulic servo of said first clutch is disposed between the axial direction of said speed reduction planetary gear and the hydraulic servo of said third clutch;

and wherein the hydraulic oil is supplied to the hydraulic servo of said first clutch from the oil line provided within said input shaft.

17. The vehicle automatic transmission according to claim 16, wherein the hydraulic servo of said second clutch is disposed on the side opposite in the axial direction from said speed reduction planetary gear as to said planetary gear set.

18. The vehicle automatic transmission according to claim 16, wherein the hydraulic servo of said second clutch is disposed between the axial direction of said planetary gear set and said speed reduction planetary gear.

19. The vehicle automatic transmission according to claim 18, wherein the hydraulic servo of said second clutch is disposed between the axial direction of the hydraulic servo of said third clutch and the hydraulic servo of said first clutch.

20. The vehicle automatic transmission according to one of claim 7 through 10, wherein the hydraulic servo of said third clutch is disposed on the side opposite in the axial direction from the hydraulic servo of said fourth clutch as to said speed reduction planetary gear, and on the boss unit extended from said case;

and wherein the hydraulic oil is supplied to the hydraulic servo of said third clutch via an oil line provided within said boss unit.

21. The vehicle automatic transmission according to claim 20, wherein the hydraulic servo of said first clutch is disposed between the axial direction of said speed reduction planetary gear and the hydraulic servo of said fourth clutch;

and wherein the hydraulic oil is supplied to the hydraulic servo of said first clutch from the oil line provided within said input shaft.

22. The vehicle automatic transmission according to claim 21, wherein the hydraulic servo of said second clutch is disposed on the side opposite in the axial direction from said speed reduction planetary gear as to said planetary gear set.

23. The vehicle automatic transmission according to claim 21, wherein the hydraulic servo of said second clutch is disposed between the axial direction of said planetary gear set and said speed reduction planetary gear.

24. The vehicle automatic transmission according to claim 23, wherein the hydraulic servo of said second clutch is disposed between the axial direction of the hydraulic servo of said first clutch and the hydraulic servo of said fourth clutch.

25. The vehicle automatic transmission according to claim 20, wherein the hydraulic servo of said first clutch is disposed between the axial direction of said speed reduction planetary gear and the hydraulic servo of said third clutch, and is disposed on the boss unit extended from said case;

and wherein the hydraulic oil is supplied to the hydraulic servo of said first clutch from the oil line provided within said boss unit.

26. The vehicle automatic transmission according to claim 25, wherein the hydraulic servo of said second clutch is disposed on the side opposite in the axial direction from said speed reduction planetary gear as to said planetary gear set.

27. The vehicle automatic transmission according to claim 25, wherein the hydraulic servo of said second clutch is disposed between the axial direction of said planetary gear set and said speed reduction planetary gear.

28. The vehicle automatic transmission according to claim 27, wherein the hydraulic servo of said second clutch is disposed between the axial direction of said speed reduction planetary gear and the hydraulic servo of said fourth clutch.

29. The vehicle automatic transmission according to claim 6, wherein said third clutch is disposed on the side opposite in the axial direction from said planetary gear set as to the hydraulic servo of said fourth clutch;

and wherein said outer circumferential side linking path has a first linking member which links said input shaft and said fourth clutch, passing through the outer circumferential side of said third clutch;

and wherein said inner circumferential side linking path has a second linking member which links said third clutch and said first rotation element.

30. The vehicle automatic transmission according to claim 29, wherein said fourth clutch is linked to said first rotation element via said second linking member.

31. The vehicle automatic transmission according to claim 29 or claim 30, wherein the clutch drum of said fourth clutch is linked to said second linking member, and also the clutch drum of said fourth clutch is capable of being retained by said first retaining means.

32. The vehicle automatic transmission according to one of claim 29 through claim 31, wherein the hydraulic servo of said third clutch is disposed between the axial direction of said speed reduction planetary gear and the hydraulic servo of said fourth clutch.

33. The vehicle automatic transmission according to claim 32, wherein the hydraulic oil is supplied to the hydraulic servo of said third clutch via the oil line provided on said support wall.

34. The vehicle automatic transmission according to claim 32, wherein the hydraulic oil is supplied to the hydraulic servo of said third clutch via the oil line provided on said input shaft.

35. The vehicle automatic transmission according to one of claim 32 through claim 34, wherein the hydraulic servo of said first clutch is disposed on the side opposite in the axial direction from said reduced speed planetary gear as to said planetary gear set.

36. The vehicle automatic transmission according to claim 35, wherein the hydraulic servo of said first clutch is disposed on the boss unit extended from said case;  
and wherein the hydraulic oil is supplied to the hydraulic servo of said first clutch from the oil line provided within said boss unit.

37. The vehicle automatic transmission according to claim 35, wherein the hydraulic oil is supplied to the hydraulic servo of said first clutch via the oil line provided on said input shaft.

38. The vehicle automatic transmission according to one of claim 35 through claim 37, wherein the hydraulic servo of said second clutch is disposed between the axial direction of said planetary gear set and said reduced speed planetary gear.

39. The vehicle automatic transmission according to one of claim 35 through claim 37, wherein the hydraulic servo of said second clutch is disposed on the side opposite in the axial direction from said speed reduction planetary gear as to said planetary gear set.

40. The vehicle automatic transmission according to one of claim 32 through claim 34, wherein the hydraulic servo of said first clutch is disposed between the axial direction of the hydraulic servo of said fourth clutch and said planetary gear set.

41. The vehicle automatic transmission according to claim 40, wherein the hydraulic oil is supplied to the hydraulic servo of said first clutch via the oil line provided on said input shaft.

42. The vehicle automatic transmission according to claim 40 or claim 41, wherein the hydraulic servo of said second clutch is disposed on the side opposite in the axial direction from said speed reduction planetary gear as to said planetary gear set.

43. The vehicle automatic transmission according to one of claim 29 through claim 31, wherein the hydraulic servo of said third clutch is disposed on the side opposite in the axial direction from the hydraulic servo of said fourth clutch as to said speed reduction planetary gear, and on the boss unit extended from said case;

and wherein the hydraulic oil is supplied to the hydraulic servo of said third clutch via an oil line provided within said boss unit.

44. The vehicle automatic transmission according to claim 43, wherein the hydraulic servo of said first clutch is disposed on the side opposite in the axial direction from said reduced speed planetary gear as to said planetary gear set.

45. The vehicle automatic transmission according to claim 44, wherein the hydraulic servo of said first clutch is disposed on the boss unit extending from said case;

and wherein the hydraulic oil is supplied to the hydraulic servo of said first clutch from the oil line provided within said boss unit.

46. The vehicle automatic transmission according to claim 44, wherein the hydraulic oil is supplied to the hydraulic servo of said first clutch via the oil line provided on said input shaft.

47. The vehicle automatic transmission according to one of claim 43 through claim 46, wherein the hydraulic servo of said second clutch is disposed between the axial direction of said planetary gear set and said speed reduction planetary gear.

48. The vehicle automatic transmission according to one of claim 43 through claim 46, wherein the hydraulic servo of said second clutch is disposed on the side opposite in the axial direction from said speed reduction planetary gear as to said planetary gear set.

49. The vehicle automatic transmission according to one of claim 6 through claim 48, wherein said reduced speed planetary gear and said planetary gear set are arrayed on the same axis and in the axial direction.

50. The vehicle automatic transmission according to one of claim 6 through claim 49, wherein said output member is an output shaft which transmits the rotation on the same axis as said input shaft.

51. The vehicle automatic transmission according to one of claim 6 through claim 49, wherein said output member is a counter gear which transmits the rotation on an axis parallel to said input shaft.

52. The vehicle automatic transmission according to claim 51, wherein said counter gear is disposed between the axial direction of said reduced speed planetary gear and said planetary gear set.

53. The vehicle automatic transmission according to claim 51, wherein said counter gear is disposed adjacent to the side opposite said fourth clutch of said support wall, and is supported by said support wall so as to be capable of rotating.

54. The vehicle automatic transmission according to one of claim 6 through claim 53, wherein said reduced speed planetary gear comprises a double pinion planetary gear which has a first sun gear wherein the rotation thereof is fixed, a first pinion gear which meshes with said first sun gear, a second pinion gear which meshes with said first pinion gear, a first carrier which supports said first pinion gear and said second pinion gear so as to be capable of rotating and also which continuously is linked to said input shaft, and a first ring gear which meshes with said second pinion gear and also outputs said reduced speed rotation.

55. The vehicle automatic transmission according to one of claim 6 through claim 54, wherein said planetary gear set comprises a second sun gear, a third sun gear, a third pinion gear which meshes with said third sun gear, a fourth pinion gear which meshes with said second sun gear and meshes to said third pinion gear, a second carrier which supports said third pinion gear and said fourth pinion gear so as to be capable of rotating, and a second ring gear which meshes with said fourth pinion gear;

and wherein said first rotation element is formed from said second sun gear;

and wherein said second rotation element is formed from said third sun gear;

and wherein said third rotation element is formed from said second carrier;

and wherein said fourth rotation element is formed from said second ring gear.



56. The vehicle automatic transmission according to one of claim 6 through claims 55; wherein a forward first speed is achieved by engaging said first clutch and by retaining said second retaining means;

a forward second speed by engaging said first clutch and by retaining said first retaining means;

a forward third speed by engaging said first clutch and said third clutch;

a forward fourth speed by engaging said first clutch and said fourth clutch;

a forward fifth speed by engaging said first clutch and said second clutch;

a forward sixth speed by engaging said second clutch and said fourth clutch;

a forward seventh speed by engaging said second clutch and said third clutch;

a forward eighth speed by engaging said second clutch and by retaining said first retaining means; and

a reverse speed by engaging said third clutch or said fourth clutch and by retaining said second retaining means.